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UNITED STATES DEPARTMENT OF AGRICULTURE

# FOREST SERVICE

R-1

## TIMBER MANAGEMENT PLAN

## TOBACCO RIVER WORKING CIRCLE

Kootenai National Forest
Montana

1952

M—5123

U. S. GOVERNMENT PRINTING OFFICE

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# TIMBER MANAGEMENT PLAN FOR THE TOBACCO RIVER WORKING CIRCLE

KOOTENAI NATIONAL FOREST

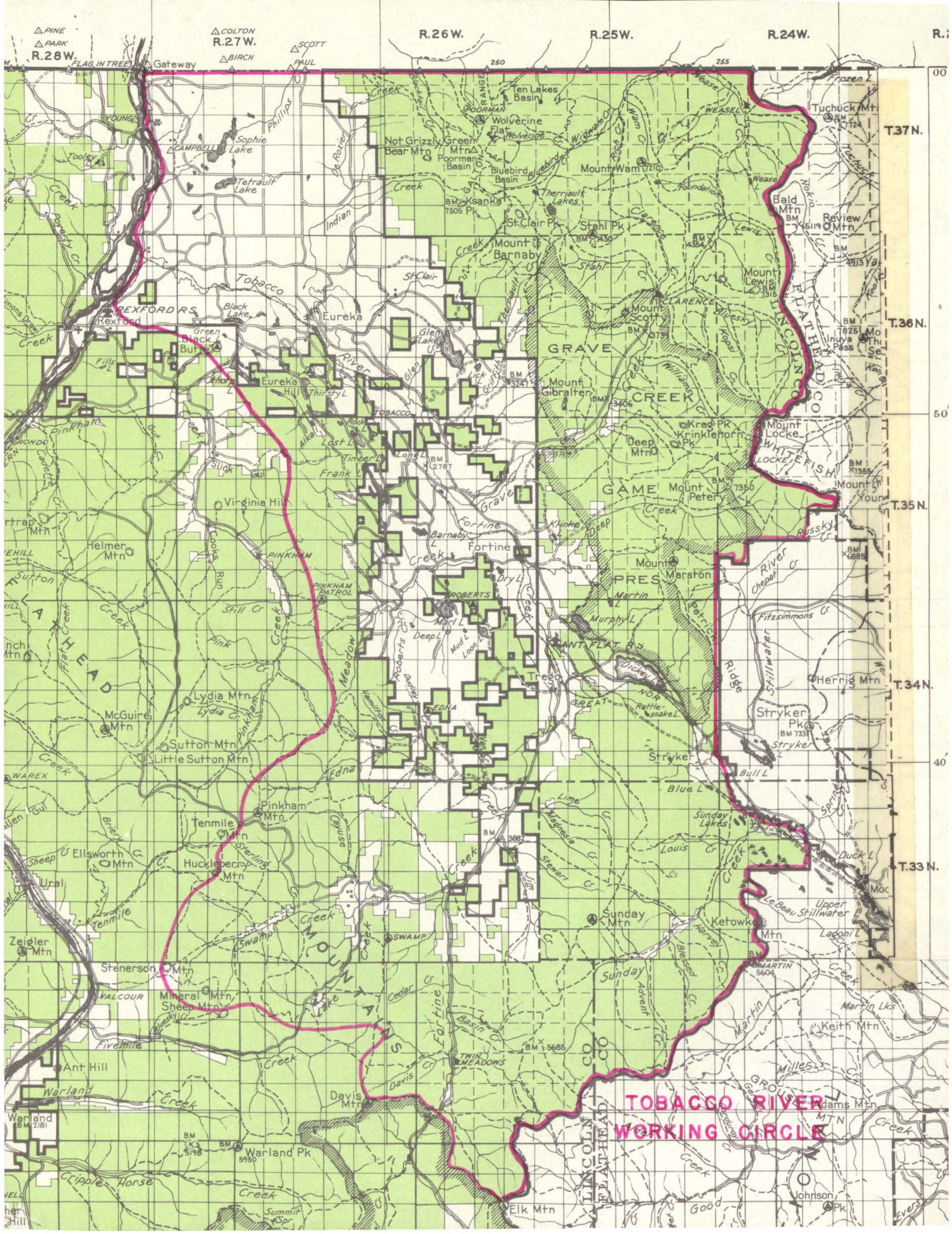
LINCOLN AND FLATHEAD COUNTIES, MONTANA

1952

Forest Service policy requires the development and application of sustained yield management on the national forests, working circle by working circle. It is the purpose of this plan to apply the timber management policies and objectives of national forest administration growing out of related Federal laws and as currently set forth in the Forest Service Manual to the management of the timber resources of the national forest lands in the Tobacco River Working Circle.

The basic data for this plan were obtained from the extensive Forest Survey made by the Northern Rocky Mountain Forest and Range Experiment Station during 1934 and 1935 and from intensive timber cruises made by the Kootenai National Forest. The data were compiled, adjusted and verified in 1946. Field and other checks were made. This plan should be considered a stop-gap plan of management for the working circle. Work is now being initiated to obtain better data on timber types, volumes, growth and mortality for a revision of the plan by 1960.

Compilation of data and first draft of plan by Corland L. James in 1946; revised and rewritten by Howard E. Ahlskog in 1949 and by Merrill D. Oaks in 1952.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TOBACCO RIVER
WORKING CIRCLE
LINCOLN CO
FLATHEAD CO
Gateway
Rexford
Eureka
Tobacco
Black Lake
Sophie Lake
Tetrault Lake
Ten Lakes Basin
Wolverine Flat
Not Grizzly Bear Mtn
Green Mtn
Poorman Basin
Bluebird Basin
Mount Wam
Ksanka
St Clair Pk
Stahl Pk
Mount Barnaby
Mount Lewis
Bald Mtn
Review Mtn
Tuchuck Mt
Mount Scott
Mount Gibralter
GRAVE CREEK
Mount Locke
Deep Mtn
Krag Pk
Krinklehorn Pk
Mount Petery
Mount Marston
PRES
Virginia Hill
Helmer Mtn
Fortine
Pinkham
Roberts
Trego
Herrig Mtn
Stryker Pk
Stryker
Lydia Mtn
McGuire Mtn
Sutton Mtn
Little Sutton Mtn
Pinkham Mtn
Tenmile Mtn
Ellsworth Mtn
Huckleberry Mtn
Ural
Zeigler Mtn
Stenerson Mtn
Mineral Mtn
Sheep Mtn
Ant Hill
Warland
Warland Pk
Davis Mtn
Elk Mtn
Sunday Mtn
Ketowke Mtn
Keith Mtn
Johnson Pk
Adams Mtn
Sunday Lakes
Upper Stillwater
Lagoni L
Duck L
Bull L
Blue L
Martin Lks
Foundation Cr
Tuchuck Cr
Weasel L
Frozen L
Yaak
Moyie
Kootenai
Fatty Cr
Poverty Cr
Phillips
Indian
Tobacco River
Grave Creek
Fortine Creek
Pinkham Cr
Meadow Creek
Stillwater
Fitzsimmons Cr
Chepar River
Russky Cr
Sunday Cr
Martin Cr
Fivemile Creek
Tenmile Creek
Warland Creek
Cripple Horse Creek
Good Creek
Swamp Creek
Twin Meadows
Ridge
Mountains

Submitted by /s/ Merrill D. Oaks — March 17, 1952

Approved by /s/ Howard E. Ahlskog (Forest Supervisor) — March 18, 1952

Reviewed:

NATIONAL FOREST ADMINISTRATION

| Divisions | Regional Office (Initials) | (Date) | Washington Office (Initials) | (Date) |
|---|---|---|---|---|
| Timber Management | G.M.D. 4/24/52 S.H.L. 4/23/52 | D.N.M. 4/23/52 | I.J.M. | 6/23/52 |
| Recreation & Lands | R.U.H. 4/29/52 for R&L activities only. | | J.S. | 6/11/52 |
| Range Management | T.L. | 4/29/52 | W.L.D. | 6/17/52 |
| Wildlife Management | T.L. | 4/29/52 | M.A.G. | 6/17/52 |
| Watershed Management | E.F.B. | 4/29/52 | G.R.S. | 6/18/52 |
| Fire Control | A.E.S. | 4/29/52 | C.A.G. | 6/10/52 |
| Engineering | H.R. Jones | 4/25/52 | C.T.Sullivan | 6/18/52 |

BRANCH OF RESEARCH

| | NRM Forest and Range Experiment Station (Initials) | (Date) | Washington Office (Initials | (Date) |
|---|---|---|---|---|
| | H.W.C. | 4/24/52 | | |
| | LeB. | 4/24/52 | W.M.Z. | 6/12/52 |
| | G.M.J. | 4/25/52 | | |

Approved by P. D. Hansen (Regional Forester) — June 2nd 1952 (Date)

Approved by Edward P. Cliff Acting (Chief) L.S.G. — June 23, 1952 (Date)

## SUMMARY OF PLAN

### Total Area of Commercial Forest and Other Lands

| Classification | National Forest Acres | Other Owners Acres | Total Acres |
|---|---|---|---|
| Commercial Forest Land | 205,670 | 73,810 | 279,480 |
| Other Lands | 48,996 | 39,870 | 88,866 |
| Total Gross Area | 254,666 | 113,680 | 368,346 |

### Commercial Forest Land by Principal Types and Ownerships

| Type | Total Area | | National Forest | | Other Public | | Private | |
|---|---|---|---|---|---|---|---|---|
| | Acres | Percent | Acres | Percent | Acres | Percent | Acres | Percent |
| | Thousands of Acres | | | | | | | |
| Commercial Forest | 279.5 | 100 | 205.6 | 73.6 | 12.3 | 4.4 | 61.6 | 22.0 |
| Larch-Douglas fir | 162.4 | 58.1 | 111.4 | 68.5 | 8.2 | 5.1 | 42.8 | 26.4 |
| Douglas fir | 15.6 | 5.6 | 12.7 | 81.0 | .7 | 4.9 | 2.2 | 14.1 |
| Spruce | 35.9 | 12.8 | 34.9 | 97.3 | .3 | .8 | .7 | 1.9 |
| Ponderosa Pine | 13.0 | 4.6 | 1.0 | 7.7 | 2.1 | 16.2 | 9.9 | 76.1 |
| Lodgepole Pine | 52.6 | 18.9 | 45.6 | 86.7 | 1.0 | 1.9 | 6.0 | 11.4 |

### Sawtimber Volumes by Species and Ownership (MMBM)

| Ownership | Total | | Spruce | | Larch | | Doug. Fir | | Other | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Vol. | % | Vol. | % | Vol. | % | Vol. | % | Vol. | % |
| Nat'l Forest | 839.9 | 95.1 | 258.7 | 30.8 | 321.4 | 38.3 | 234.4 | 27.9 | 25.4 | 3.0 |
| Other | 42.8 | 4.9 | 1.8 | 4.2 | 19.4 | 45.3 | 19.4 | 45.3 | 2.2 | 5.2 |
| Total | 882.7 | 100 | 260.5 | 29.5 | 340.8 | 38.6 | 253.8 | 28.8 | 27.6 | 3.1 |

### Number of Poles by Species and Ownership

| OWNERSHIP | (Number) | |
|---|---|---|
| | Lodgepole | Cedar |
| National Forest | 1,951,000 | 3,100 |
| Small Private | 42,600 | 800 |
| Other Public | 21,800 | 200 |
| Total | 2,154,000 | 4,100 |

Allowable Annual Cut, Sawtimber - 12,000 MBM

Approximate Acreage Cut Annually:

Sawlog Sales - 1220 acres (To obtain allowable annual cut.)
Pole Sales - 200 acres
Christmas tree sales - 4000 acres

Previous plan (Warland Working Circle) approved June 19, 1924. Plan revision should be made by January 1, 1960.

## MANAGEMENT PLAN

1. Summary of results under previous plan:

a. The original management plan was prepared for this unit in 1924 by J. H. Bosworth and approved by E. A. Sherman, Acting Forester, on June 19, 1924. The original unit included all area covered in the present plan plus the Pinkham Creek Drainage. This latter drainage is now a part of the Kootenai Sustained Yield Unit Plan, approved in 1946.

b. Summary of Cut from National Forest Lands (1939 - 1951):

| Year | Million Board Feet All Species | Year | Million Board Feet All Species |
|---|---|---|---|
| 1939 | .07 | 1946 | 7. |
| 1940 | .3 | 1947 | 9. |
| 1941 | - | 1948 | 13. |
| 1942 | .4 | 1949 | 9. |
| 1943 | 4. | 1950 | 5. |
| 1944 | 5. | 1951 | 13. |
| 1945 | 6. | | |

In addition to the above sawtimber cut, approximately 200 carloads of Christmas trees are shipped from this working circle annually. For the past three years, about 35% of this cut has been harvested from national forest lands.

2. Location

The Tobacco River Working Circle is located within Lincoln and Flathead Counties, Montana, and is all within the Kootenai National Forest. The working circle boundaries are identical to the boundaries of the Fortine Ranger District. It is bounded on the north by Canada, on the east by the Flathead National Forest, and on the west and south by the Kootenai Sustained Yield Unit, which has an approved Management Plan(1946).

The Tobacco River Working Circle includes the entire Tobacco River and Sunday Creek Drainages, plus Wigwam Creek, Weasel Creek and other small drainages that drain north into Canada, and a portion of the Upper Stillwater River. Communities within the area are located in the Tobacco River Valley. They include Eureka, Fortine, Trego and Stryker, Montana. The population within the boundaries of the working circle approximates 2500 persons.

3. Forest Description:

a. Area Involved

| | Nat'l Forest Acres | Other Owners Acres | Total Acres |
|---|---|---|---|
| Commercial Forest Land | 205,670 | 73,810 | 279,480 |
| Other Land | 48,996 | 39,870 | 88,866 |
| Total Gross Area | 254,666 | 113,680 | 368,346 |

Other land includes cultivated, brush, barren and sub-alpine lands.

b. Topography and Climate

The elevation of the working circle ranges from 2400 feet to 7400 feet above sea level, with a probable average elevation of approximately 3500 feet.

Topography varies from gentle rolling hills in valley bottoms to extremely steep and broken slopes in the higher elevations.

The majority of the commercial timber lands occur at elevations below 5000 feet. The average annual precipitation in the valley bottoms is 26 inches, but at high elevations this will increase beyond 40 inches per annum. Snow depths in Tobacco Valley seldom exceed 3 feet; however,

at elevations of 5000 feet the depth reaches 12 feet.

With deep snows in the high elevations and steep topography, practically all of the spruce type and about half the larch-Douglas fir types are suitable for summer logging only. Due to these conditions it is expected the average logging season will be approximately nine months.

c. Forest Types

Commercial forest land of all ownerships

| Type | Acres | Percent |
|---|---|---|
| Larch-Douglas fir | 162,400 | 58.1 |
| Lodgepole pine | 52,600 | 18.9 |
| Spruce | 35,900 | 12.8 |
| Douglas fir | 15,600 | 5.6 |
| Ponderosa Pine | 13,000 | 4.6 |
| Total | 279,500 | 100.0 |

d. Site Index

In the table listed below are shown five composite site classes indicated by Roman numerals, for all the important types in the working circle. Site I is the highest quality type and Site V is the poorest. The site quality of the forest land of all ownerships in the Tobacco River Working Circle by area is as follows:

| Site | I | II | III | IV | V | Total |
|---|---|---|---|---|---|---|
| Area (Acres) | o | 128 | 59,773 | 176,479 | 43,100 | 279,480 |

e. Present Stands of Timber

| | Sawtimber M Bd. Ft. | Poles LPP | Poles Cedar |
|---|---|---|---|
| National Forest | 839,900 | 1,951,000 | 3,100 |
| Other Owners | 42,800 1/ | 64,000 | 1,000 |
| Total, All Owners | 882,700 | 2,015,000 | 4,100 |

1/ The actual cut from private lands for the past 5 years has exceeded this estimated remaining volume by nearly 300 percent. The remaining volume estimate of 1946 was based on the Forest Survey of 1934-1935. Apparently this estimate was made to standards that missed considerable volume now being utilized. Then, too, there has been time for considerable growth. Many of the small mills now engaged in the production of railroad ties, dimension lumber and cants, are securing their entire cut from these logged over private lands.

Sawtimber volume by species (national forest): Spruce - 31%, Larch - 38%, Douglas fir - 28%, all others - 3%.

f. Ownership

Ownership of Commercial Forest Land

| Owner | Area in Acres | Percent |
|---|---|---|
| National Forest | 205,670 | 74 |
| Private | 61,269 | 22 |
| State | 6,179 | 2 |
| County | 6,018 | 2 |
| Public Domain | 344 | - |
| Total | 279,480 | 100 |

Present Condition of Commercial Forest Lands
By Ownership

| Owner | Sawtimber | Seedlings, Saplings and poles | Non Stocked | Total |
|---|---|---|---|---|
| | Percentages by Area | | | |
| National Forest | 41 | 56 | 3 | 100 |
| Private | 3 | 94 | 3 | 100 |
| State | 25 | 75 | - | 100 |
| County | 17 | 74 | 9 | 100 |
| Public Domain | 20 | 80 | - | 100 |

4. Management Objectives

a. Objectives

(1) Maintain a sustained yield of timber to contribute to the national welfare and stabilize the economy of local communities by furnishing continuous employment in harvesting and manufacturing forest products.

(2) Progress as rapidly as practicable toward a normal distribution of age classes, a maximum growth rate, and a maximum allowable annual cut fully in keeping with the productive capacity of the land.

(3) Reduce to a minimum the losses from fire, insects and disease.

(4) Manage the cropping of trees so as to minimize erosion, prevent the disturbance of stream channels and prevent excessive fluctuations of stream flow.

(5) Correlate timber growing and harvesting with grazing, recreation, wildlife management, water management and other uses of forest land.

b. Community Support - Description of Situation

Eureka, Montana, is the only incorporated town within the working circle. It has a population of approximately 1500. Other communities within the area include Fortine, Trego and Stryker, all of which are much smaller than Eureka. It is estimated that during recent years the

average annual income of people living within the working circle has been approximately as follows:

| Source | Amount | Percent |
|---|---|---|
| Lumber, ties, etc. | $ 325,000 | 32 ) 55 |
| Christmas trees | 230,000 | 23 ) |
| Farm Products | 380,000 | 38 |
| Miscellaneous | 70,000 | 7 |
| | $ 1,005,000 | 100 % |

It is noteworthy from the above table that 55% of the total estimated income to the people within the working circle was derived from forest products. Of this income from forest products, approximately 40% is obtained from Christmas tree harvesting and the remaining 60% is obtained from the manufacture of lumber, railroad ties and cants. With the rapidly diminishing stands of privately owned timber becoming less of a factor in supplying these products, the national forest timber will become of increasing importance in supplying the needs of the forest industries within the area.

Most of the woods and mill operators and workers live in the communities or on small ranches within this working circle and commute daily to their work. Temporary camp construction has not been necessary in the past, however, as the more remote portions of the working circle are opened up, there may be need for establishing camps in the woods.

At the present time there are approximately 40 small circular mills within the area. Each has a capacity of five to twenty-four thousand board feet of lumber and railroad cross ties a day. There are no band mills operating within this working circle.

The actual cut of national forest timber and the estimated cut of timber from other lands in the working circle are as follows:

| Year | From N.F. Land 1/ Million Bd. Ft. | From Other Lands Million Bd. Ft. | Totals Million Bd. Ft. |
|---|---|---|---|
| 1947 | 9 | 40 | 49 |
| 1948 | 13 | 40 | 53 |
| 1949 | 9 | 30 | 39 |
| 1950 | 5 | 20 | 25 |
| 1951 | 13 | 25 | 38 |

1/ All convertible products in board feet.

With 74 percent of the commercial forest lands in the working circle in national forest ownership and the remaining 26 percent of other ownerships being rapidly depleted, an allowable annual cut of 12 million from national forest lands plus whatever can be obtained from other lands will not sustain the local lumber industry at its present level.

In view of the diminishing volume of timber in other ownerships it is probable that employment supported by forest products will decrease in the immediate future. It is hoped that this trend will be partially offset by more intensive utilization and that a stable demand for poles and pulpwood can be developed.

Local consumption is a minor factor in the marketing of products produced within the working circle. Local needs for building materials, fencing and fuel cause practically no drain on the timbered area. Important markets are reached by exporting railroad cross ties, lumber, poles and posts out of the area, mostly by railroad.

c. Community Support Objectives

(1) The high degree of dependency that the workers and the communities in this working circle have upon its forest industries is recognized. The objective will be to manage the timber resources to give support and stability to the local economy insofar as is practicable under the regulations governing the sale of national forest timber.

(2) Managing national forest timber on a sustained yield basis will tend to stabilize local woods employment and give local industries an opportunity to obtain a sustained supply of timber.

(3) Insofar as practicable the cutting budget and sales plans will provide for winter logging chances in order to provide an opportunity for an extended season of employment.

(4) Sustain the highest practicable regulated cut by requiring close utilization and by applying intensive silvicultural practices, including adequate protection from fire, insects and disease.

(5) Facilitate the harvesting of unregulated forest products, such as Christmas trees.

(6) See also Sales Policy, page 26 .

d. Silvicultural Objectives

(1) To keep a continuous crop of trees growing on the commercial forest land by insuring a full restocking of the desired species and a normal distribution of age classes.

(2) To regulate the marking and cutting of timber in such a manner that the greatest growth in the shortest time is assured.

(3) To restock fully by planting on non-stocked and poorly stocked areas, particularly the better timber growing sites.

(4) To preserve efficient watershed protection for an abundant water supply and to prevent soil erosion.

(5) Manage Christmas tree cutting to obtain maximum silvicultural benefits.

5. Coordination with Other Uses

a. Recreation

The Tobacco River Working Circle's many miles of good fishing streams, abundance of big game, scores of alpine lakes and magnificent mountain scenery are important recreational resources. Recreational plans have not been prepared for the entire area. A special study is needed and areas having recreational values will then be handled in accordance with the recreational plan. Pending completion of the recreational plan, the timber management policy will be to reserve the timber on roadside and waterfront zones and on all other areas having recreation values.

b. Wildlife

The national forest lands provide good deer hunting and provide available browsing plants to furnish winter range for an estimated 5000 deer. At the present time, some of the winter range is overstocked with deer and over-browsing of shrubs and young tree growth is present. With the completion of the study of the Lincoln County Deer Management Unit, corrective measures will no doubt be taken so there will be little conflict between wildlife and timber management.

c. Watershed

The watershed within the Tobacco River Working Circle is an important contribution to the flow of the Kootenai River. It also yields a steady source of supply for domestic and municipal use and for summer irrigation on one large, and several small projects. Under natural forest conditions, the soil has become quite stable. Stream channels are stable and streams are clear. This stability results in a dependable perennial flow in Tobacco River. Cropping of timber should be managed to minimize erosion and distrubances of stream channels due to logging practices.

The climate and soils of the area are conducive to rapid revegetation

of grasses, browse and trees on the areas scarred in logging. Extensive cutting of timber not accompanied by severe soil disturbances results in little erosion. Logging roads, skid roads and landings should be located to effect a minimum disturbance of small streams and channels.

After logging, protective measures should be employed to include blockading of steep skid roads, and cross channeling of abandoned logging roads. Cutting the timber along the streams should be done carefully by selection cutting, or by leaving a strip of tree growth to prevent erosion of channel banks or blocking streams with logging debris. (Reference: Bullard, W.E. "Some References on Watershed Management", Pac. N. W. For. and Range Exp. Sta., Research Note No. 63, March 1950.)

c. Grazing

Approximately ninety-six thousand acres of national forest and private lands on the Tobacco River Working Circle are grazed by cattle. Of this area only a little more than five thousand acres are suited predominately for grazing alone. On the balance of the area, grazing is considered codominant or secondary to other land use. National forest and private grazing lands are intermingled, with very little fencing of the private land. Grazing is regulated on the national forest land as to length of season and number of head permitted on each allotment. The regulation of grazing on Forest Service lands influences to a limited degree the grazing on private lands, due to the mergence of the two classes of ownerships. On a majority of the national forest land, livestock grazing is temporary because eventually forest growth will crowd out the forage crops.

e. Mining

There are very little known mineralized resources within the working

circle. It is not anticipated that mining development will conflict with timber production.

Summary of Land Use by Priority All Ownerships

| Use | Area in Acres Predominant | Codominant | Secondary | Total |
|---|---|---|---|---|
| Timber Production | 229,317 | 30,731 | 19,432 | 279,480 |
| Livestock Production | 5,581 | 29,478 | 61,238 | 96,294 |
| Game Production | | 32,000 | 40,166 | 72,166 |
| Watershed Production | 98,528 | 1,253 | | 99,781 |
| Agriculture | 34,146 | | | 34,146 |
| Recreational | 774 | 4,000 | | 4,774 |

6. Regulation

a. Rotation

Length of rotation period has been determined for the different types, as follows:

| | |
|---|---|
| Larch-Douglas fir | 180 years |
| Douglas fir | 180 years |
| Ponderosa Pine (minor type) | 150 years |
| Spruce | 120 years |
| Lodgepole pine | 120 years |

These rotations were set to produce trees of marketable size, obtain a loggable volume per acre and reach the culmination of mean annual growth. Sawlogs are the principal product except for poles in the case of lodgepole pine. Using these rotations the timber will be harvested before the time that losses from insects and disease are high. The actual cutting age may vary considerably from the average rotations given. In general the poorer sites will require longer and the better sites shorter rotations. Where, as in the case of ponderosa pine, clear wood may be an important objective, some trees or stands may be allowed to grow beyond the average rotation age. If pulpwood becomes an important product of this working circle, it will tend to shorten the rotation of types used for that purpose.

b. Cutting Cycles

The primary objective will be to cut the most decadent areas of each type in the entire working circle, and insofar as possible remove the highest risk trees as rapidly as practicable. This plan will involve application of both selective cutting practices and patch clear cutting. It is not advisable to arbitrarily establish either method as applicable to the unit as a whole.

It is difficult to establish a definite cutting cycle at this time, but it is estimated that an adjustment period of 50 or 60 years will be required to place the entire unit on a managed basis.

It is probable that the primary objective of harvesting the most decadent portion of the individual stands can be accomplished within a twenty year period on most of the unit. Successive cutting will, however, be required on many areas before all overaged timber is utilized.

General application of risk marking will be followed to the extent that stands or trees that will not survive for the next 20 years will be marked for cutting and those that will survive will be reserved for the next cut.

In the actual application of this objective it must be recognized that modifications and compromises may be necessary in order to amortize costs of development, or to provide acceptable logging chances or to meet other practical requirements.

c. Growth and Mortality

For lack of any definite information on this point it is assumed that growth equals mortality on the large acreage of stands over rotation

age. Mortality has not been excessive in this working circle in recent years, therefore, this appears to be a conservative assumption.

By following the policy of removing the most decadent stands first it may be possible after a time, to obtain some net growth even in the older stands. There are no normal yield tables for the important types in this working circle upon which to base growth estimates after all stands are in a growing condition.

To sustain an annual allowable cut of 12 million feet from 200,000 acres of this commercial national forest land would require a mean annual growth of only 60 board feet per acre. It is reasonable to expect that during the next rotation this can be increased to 90 to 100 board feet per acre, annually, and permit a sustained allowable cut of 18 to 20 million board feet per year.

d. Method of Cutting

Current regional marking rules will be followed. (For current rules see old Timber Management Handbook - pages 34 to 55. New marking guides for ponderosa pine, lodgepole pine, larch-Douglas fir and spruce types are scheduled to be completed in 1952.) Methods of cutting as outlined in Section b above will be followed to insure the long term silvicultural objective of placing most types under even-aged management. Patch clear cutting will generally be employed to accomplish this objective, however, there will be cases where stand composition or other practical consideration will vary this cutting method to seed tree leave or other acceptable systems.

Past cutting practices on national forest land have generally

followed the clear cutting system in decadent stands, however, a light seed tree leave has been provided for on many areas. The areas clear cut have been larger than is normally provided for in a typical patchwise clear cutting system and a seed tree leave was considered to be essential.

In general, a satisfactory restocking of Douglas fir has been secured. Natural regeneration of larch has been less satisfactory and in some areas stand composition is definitely deficient in this species. Very little of the spruce type has been cut.

On private lands clear cutting has generally been followed in the past. Higher merchantibility requirements of early day logging did however, leave considerable growing stock which has provided a large percent of the volume recently cut from lands in this category.

Much of the private land was broadcast burned following logging, and in general has reproduced satisfactorily to Douglas fir, lodgepole pine and larch. Douglas fir is predominant, and for this reason, these lands now produce the bulk of the Christmas trees harvested annually from the Eureka vicinity.

e. Growing Stock Objectives

This working circle has a surplus of growing stock over rotation age. Of the present merchantable volumes in the larch-Douglas fir, Douglas fir, and spruce types, 429 million board feet, or 52% of the present net volume within the working circle falls within the 200+ age class. As previously stated, the objective is to cut the most decadent stands first and progress toward a normal distribution of age classes as rapidly as is consistent with sustained yield objectives. The

elimination of these overaged stands will progressively convert the cut over areas into productive growing stands.

f. Calculation of Allowable Cut

Summary of Allowable Annual Cut

Regulated Cut

| Types | Allowable Annual Cut - Sawtimber<br>Million Board Feet |
|---|---|
| Larch-Douglas fir, Douglas fir, and Ponderosa Pine | 8 |
| Spruce | 4 |
| Total | 12 |

Approximate area cut over per year on a clear cutting basis to obtain above allowable annual cut, 1220 acres.

The cut is not regulated by types or species. Nevertheless, it is a firm objective to cut in the several types in proportion to their occurrence so far as practicable. For example, it is highly desirable to cut in the spruce type to the extent shown but markets and accessibility may not make this practicable in the immediate future.

For the present, products other than sawlogs are not regulated. This includes cedar poles and other products, and all the potential products of the lodgepole pine type.

The allowable cut is based on the utilization of sawlogs to merchantability specifications now in general use on this and adjacent national forests. (See merchantability specifications, page 26 ). Use of dead timber and other wood below these merchantability specifications is not regulated.

Calculations

The allowable annual cut was obtained by a series of tabular computations. (See Lindh's S-PLANS, Timber Management, memorandum of December 12, 1951.) From these calculations, as shown here, the allowable annual cut of the larch--Douglas fir, Douglas fir, and ponderosa pine types has been set at 8 million and 4 million for the spruce type, a total of 12 million board feet of sawtimber for the working circle. This would require cutting over about 1220 acres per year on a clear-cutting basis. The fact that the cut is in the oldest age classes for such a long time raises the question of whether these stands will wait that long to be harvested. However, as recorded above, under cutting methods, it is planned to cut first those stands and trees most in need of cutting and to try to prevent the loss of the present volume. It is hoped that this will make it possible to harvest these older stands with a sustained cut. However, if at any later time it appears that windthrown, insects, disease or other destructive agencies are killing timber faster than it is being cut, it will be necessary to recalculate the allowable cut.

The allowable cut does not include the cedar poles or any of the products that might be obtained from the 45,600 acres of the lodgepole pine type. It is estimated that there are 1,950,000 merchantable lodgepole pine and 3100 cedar poles in the working circle. The cut of these is not regulated. They are a perishable product. They cannot be held indefinitely. Market and accessibility factors will prevent them from being cut as fast as would be desirable. So long as this condition prevails there is nothing to be gained by regulating the cut of poles. However, just for statistical purposes the allowable cut of poles is estimated to be 30,000 per year, equivalent to 3 million board feet per year.

In addition to the sawtimber and poles, the working circle could produce a sustained cut of pulpwood, principally from its lodgepole pine and spruce stands. Although the allowable cut of pulpwood is as yet unestimated, it is believed that the amount would be considerable. Christmas trees are an important product of this working circle. For the past 5 years an average of 118,000 Christmas trees have been cut annually from Forest Service lands within this working circle. An allowable cut of 150,000 trees would seem ample to take care of additional areas made accessible through logging, since many of the older cutting areas are now growing out of Christmas tree productiveness.

The production of Christmas trees will be considered secondary to the production of sawtimber on lands within the unit. The harvesting of Christmas trees will be governed by cutting practices designed to obtain silvicultural benefits favoring the establishment or improvement of sawtimber stands.

Tobacco River Working Circle, Kootenai N. F.

Tabular Calculation of Allowable Annual Cut
National Forest Ownership

Allowable Annual Cut of L-DF, DF, PP Types 8 Million bd. ft.

Rotation 180 Years (Includes a small acreage of PP type, rotation 150 years.)

| Current Age Class | Ave. Cutting Age | Area | Mean ann. Increment | Net Vol. per acre at Ave. Cutting Age | Total Volume To Cut | Years to Cut: Each Age Class | Years to Cut: Cumulative | Area Cut Per Year |
|---|---|---|---|---|---|---|---|---|
| Years | Years | Acres | Board Feet | | Millions | Years | Years | Acres |
| 200 plus | Mature | 45,810 | - | 9.0 [1] | 412.3 | 51.5 | 51.5 | 890 |
| 180 | 255 | 30,404 | 50 [2] | 12.7 | 386.1 | 48.2 | 99.7 | 630 |
| 150 | 255 | 6,568 | 50 | 12.7 | 83.4 | 10.4 | 110.1 | 630 |
| 130 | 243 | 3,490 | 50 | 12.1 | 42.2 | 5.2 | 115.3 | 670 |
| 110 | 228 | 4,529 | 50 | 11.4 | 51.6 | 6.4 | 121.7 | 710 |
| 90 | 215 | 5,159 | 50 | 10.7 | 55.2 | 6.9 | 128.6 | 750 |
| 70 | 203 | 6,058 | 50 | 10.1 | 61.2 | 7.7 | 136.3 | 790 |
| 50 | 188 | 3,161 | 50 | 9.4 | 29.7 | 3.7 | 140.0 | 850 |
| 30 | 174 | 7,399 | 50 | 8.7 | 64.4 | 8.0 | 148.0 | 920 |
| 10 | 163 | 10,255 | 50 | 8.1 | 83.1 | 10.4 | 158.4 | 990 |
| Non-Restocking | | 2,332 | - (Not Estimated) | | 158.6 | | | |
| Totals | | 125,165 | | | 8)1269.2 | 158.4 | | |

1/ The 9.0 M per acre is based on forest survey data corrected to agree with current average cut figures from recent timber sales. Improved utilization practices are responsible for increasing the 1935 forest survey estimate of 7 M per acre to 9 M per acre as used in these computations. A total volume of 41 million board feet was cut from 17 sales during the period from 1945 to 1950. The average cut per acre from above types was found to be 9,930 board feet per acre. Stands cut during this period are believed to be poorer than average for these types.

2/ 90 + 180 = 50 bd. ft. per acre per year.

The cumulative number years required to cut over the entire acreage of these types is satisfactory. The average cutting age is satisfactory, except in the 10-year age class. Reducing the annual cut would correct this, however, this would extend the time required to cut through the timber of rotation age and older, and this does not appear to be desirable. It is not considered practicable to hold over the two older age classes for more than the 100 years indicated in the calculation.

Tobacco River Working Circle, Kootenai N. F.

Tabular Calculation of Allowable Annual Cut

National Forest Ownership

Allowable Annual Cut of Spruce Type 4 Million Bd. Ft.

Rotation 120 Years

| Current Age Class | Ave. Cutting Age | Area | Mean Ann. Increment | Net Vol. per Acre at Ave. Cutting Age | Total Volume To Cut | Years to Cut: Each Age Class | Years to Cut: Cummulative | Area Cut Per Year |
|---|---|---|---|---|---|---|---|---|
| Years | Years | Acres | Board Feet | | Millions | Years | Years | Acres |
| 200 plus | mature | 17,491 | - | 12.0 | 209.9 | 52.5 | 52.5 | 330 |
| 180 | 250 | 11,176 | 20 1/ | 13.4 | 149.8 | 37.4 | 89.9 | 300 |
| 150 | 240 | 725 | 20 1/ | 13.2 | 9.6 | 2.4 | 92.3 | 300 |
| 130 | 220 | 292 | 20 1/ | 12.8 | 3.7 | .9 | 93.2 | 320 |
| 110 | 205 | 1,462 | 20 1/ | 12.3 | 18.0 | 4.5 | 97.7 | 320 |
| 90 | 190 | 601 | 20 1/ | 12.2 | 7.3 | 1.8 | 99.5 | 330 |
| 70 | 170 | 166 | 67 2/ | 11.4 | 1.9 | .5 | 100.0 | 330 |
| 50 | 150 | 651 | 67 | 10.0 | 6.5 | 1.6 | 101.6 | 410 |
| 30 | 140 | 171 | 67 | 9.4 | 1.6 | .4 | 102.0 | 430 |
| 10 | 112 | 141 | 67 | 7.5 | 1.1 | .3 | 102.3 | 470 |
| Non Restocked | | 1,952 (Estimated 1 year's cut) | | | 4.0 | 1.0 | 103.3 | - |
| | | 34,828 | | | 413.4 | 103.3 | | |

1/ Applied to years over 180

2/ 12 M ÷ 180 = 67

120 x 85 = 102. The above is barely acceptable.

Total Volume
4)413.4(103.3

g. Cutting Budget

Coordinated 5-Year Cutting Budget and Access Road Plan
(To be Revised each year).

| Cutting Budget | | | | | | Access Road Plan | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Location of timber to be sold | Cut By Years | | | | | Number - Name - Termini - Standard and Length of road | Construction; Miles - Cost - Responsibility by Years | | | | |
| | 1952 | 1953 | 1954 | 1955 | 1956 | | 1952 | 1953 | 1954 | 1955 | 1956 |
| Clarence Cr. and Stahl Cr. | 2 | 3 Millions | (Blowdown Salvage) | | | #114A-Stahl Cr. from 114 to Upper Stahl Cr.-EE-14 4 miles | 2.0 mi. $16,000 Operator | 2.0 mi. $16,000 Operator | | | |
| Meadow Cr. | 2 | - | - | - | - | #855 Meadow Cr.-from #688 to Upper Meadow Cr.EE12 1 mile | 1.0 mi. $5000. Operator | (Reconstruction of County Road) | | | |
| Blue Sky Cr. | 3 | 3 | (Blowdown Salvage) | | | #114b-Blue Sky Cr. - from #114 to head of Cr. EE-14D 5 miles | 5 miles $24,000 Operator | | | | |
| Blue Sky Cr. | | (Part of above) | | | | #113-Graves Cr.-Clarence Cr. Cabin to #114b-EE14 1.5 mi. | 1.5 mi. $10,000 Operator | | | | |
| Lower Sunday Cr. | 1 | 1 | - | - | - | #865A-Louis Cr.-Louis Cr. to Road #315-EE12 - 2.0 miles | 1.0 mile $7,000 Operator | 1.0 mi. $7,000 Operator | (2.5 miles already constructed by Operator) | | |
| Brimstone Cr. | 2 | 3 | 5 | - | - | #865-Brimstone - #36 to head of Creek - EE14 - 4 miles | 2.0 miles $16,000 Operator | 2.0 mile $16,000 Operator | | | |
| Fortine Cr. | - | 3 | 4 | 4 | 4 | #36 - Fortine Cr.- #48 to Davis Cr. - EE14 - 5.4 miles | 5.4 mi. $77,000 F.S. | | | | |
| Blue Bird Basin | - | - | 4 | 4 | 4 | #319-Therriault Lakes- #114 to Weasel Cabin -EE14 15.0 miles | - | - | 5.0 mi. $50000 F.S. | 5.0 mi. $50000 F.S. | 5.0 mi $50000 F.S. |
| Blue Bird Basin | | (Part of above) | | | | #114-Graves Cr. - #114b to #319 EE14 - 3.0 miles | - | 3.0 mi. $24,000 F.S. | | | |
| Meadow Cr. | - | - | - | 5 | 5 | Existing road is satisfactory | | | | | |
| Miscellaneous Small Sales | 2 | 2 | 2 | 2 | 2 | Use existing roads | | | | | |
| TOTALS | 12 | 15 | 15 | 15 | 15 | | | | | | |

It will be noted that the cutting budget exceeds the recommended allowable cut for the years 1953 to 1956. This provides a margin of safety in case some of the sales do not materialize according to plan.

7. Sales Policy

As previously stated, 55% of the annual gross income of the people living within this unit is derived from the sale and processing of forest products. Community stability will be given consideration in the administration of sales in this working circle insofar as practicable under governing regulations and policies.

a. Size of Sales

It will be the policy to provide a sustained and regulated cut of forest products in order to provide an opportunity for local community and local industry stability. Insofar as practicable sales will be offered in amounts and rates to conform with the capacities and financial limitations of existing established local operators.

Size of sales will vary from a few thousand feet where utilization is desired in small residual patches, to several million board feet where extensive development is necessary.

b. Point of Manufacture

Sales shall be made at times in amounts, in locations, and under contract conditions that will encourage the processing of forest products within the working circle.

c. Merchantability Specifications

As a result of the rapidly diminishing volumes of privately owned timber within this unit, utilization has currently reached a degree beyond that normally achieved in the sale of timber from national forest in this region. Sale operators have for some time been required to utilize the side lumber resulting from tie manufacture. Within recent years, logs too small to produce a saleable tie are being utilized as dimension lumber.

Merchantability standards will vary with market conditions, but the following table as established in Manual Supplement No. 90, Aug. 1951, will be used as a base in sales procedure.

| Species | Stump Height Inches | D.B.H. Inches | Top Diameter Inches | Log Length Feet | Log Vol. B.F. | Sound Volume Percent |
|---|---|---|---|---|---|---|
| White Pine | 14 | 12 | 8 | 10 | 30 | 33-1/3 |
| Ponderosa Pine | 14 | 12 | 8 | 10 | 30 | 33-1/3 |
| Spruce | 16 | 14 | 9 | 10 | 30 | 33-1/3 |
| Larch-Douglas Fir | 16 | 14 | 10 | 12 | 40 | 50 |
| Lodgepole Pine | 12 | 12 | 8 | 10 | 30 | 33-1/3 |
| Other | 16 | 14 | 10 | 12 | 40 | 50 |

It is regional policy to set merchantability specifications to include the foreseeable minimum sized trees or logs that can be economically utilized without loss by the average efficient operator. The established minimums are averages. They should be used as a guide and varied depending upon probable use, location and silvicultural requirements.

d. Logging Methods

1. Tractor skidding will generally be permitted with limiting contract clauses covering allowable gradient, location or methods as may be required to meet individual problems on specific areas. Skidding of tree length logs will not be permitted if such practice will result in undue damage to reproduction and residual trees.
2. Primary utilization roads shall be located or approved by the Forest Service and built to acceptable standards for inclusion in the permanent road system.

3. Maximum gradient tables for each type of road constructed will be made a part of the sales contract.

4. Erosion control will be given primary consideration from the following aspects:

   a. Method of marking as related to removal of forest cover.

   b. Skidding and removal of products.

   c. Stream flow and contamination.

5. Both state and federal regulations pertaining to fire prevention will be rigidly enforced on all sale areas.

6. Slash disposal methods will be in accordance with Manual instructions and policies outlined in "Slash Disposal Instructions", Form M-1099-R1, S-SALES, Slash Disposal, effective May 16, 1949.

8. Forest Development

   a. Transportation

A transcontinental railroad through the center of the working circle is a very favorable factor in the marketing of forest products in this area. The railroad is paralleled by a state and federal-aid highway. A system of county and Forest Service roads connect with the state highway. Nevertheless, it will be necessary to construct many utilization roads to tap national forest timber within the working circle. The present system of roads extends only short distances from the railroad and there is urgent need for the construction of main utilization roads into heads of the major drainages where most of the spruce type is located.

A brief summary of status and requirement for development of this working circle is as follows:

System Roads for Timber Only

| | |
|---|---|
| Existing satisfactory | 25 Miles |
| Existing unsatisfactory | 150 Miles |
| Non-existent | 200 Miles |
| Total | 375 Miles |

For proposed developments considered essential in the immediate future refer to the 5-year cutting budget, Section 6g., page 24.

Although intangible at this time, the effects of the proposed Libby Dam must be considered in evaluating the long term transportation facilities of this working circle. One of the proposed alternate routes for the mainline of the Great Northern Railway will by-pass this vicinity completely, while others will not materially effect the existing location within the working circle.

b. Planting

Policies, priorities and specification set forth in the Region One Planting Handbook will be followed.

There are approximately 4,000 acres of non-stocked or lightly stocked national forest land within the working circle. About 2,000 acres of this land is located in the valley bottoms and on areas that were acquired by exchange after being clear-cut in early logging operations. A large portion of this land at one time supported excellent ponderosa pine sawtimber, but is now sparsely covered with Douglas fir reproduction. These lands have produced many of the Christmas trees cut in recent years. Planting of this land to ponderosa pine is desirable in most cases.

A close examination indicates that pine is the most appropriate species. Other species will be used where they are most appropriate for the site. Planting of 200 acres per year is recommended; thereby, completing the planting on the better sites in the next 10 years.

c. Timber Stand Improvement

The policies, priorities and specifications in the Region One Timber Stand Improvement Handbook will be followed.

Timber stand improvement work in this working circle is principally aimed at improving the composition and stocking of the stands. Ponderosa pine is usually planted because it is the most desirable species even in larch-Douglas fir type where it is commonly a minor component of the stand. There is also a considerable acreage of spruce type where spruce will be favored in planting and other stand improvement work.

It has been standard practice to collect K. V. money on Christmas tree sales that contain plantable sites. Considerable area has been planted to ponderosa pine in this manner and the practice will be continued. Stand improvement objectives in Christmas tree sales will consist of the following treatments in the two types from which most of the trees are obtained:

Ponderosa Pine Type

1. Weeding to improve stand composition.
2. Release established ponderosa pine reproduction.
3. Obtain natural regeneration of ponderosa pine.
4. Planting to ponderosa pine where needed.

Larch-Douglas fir Type

1. Thin to obtain optimum spacing for fast growth of quality wood.
2. Cleaning to improve stand composition.
3. Remove trees of poor form and vigor leaving thrifty trees as growing stock for sawtimber production.

d. Insect and Disease Control

It is important to be on the lookout for any insect or disease outbreaks that may occur in any of the types, to report them promptly, and to take appropriate preventative or control action immediately.

There are no white pine stands of sufficient value in this area to warrant blister rust control. Some minor losses in lodgepole pine have been sustained in past years from attacks of mountain pine beetle (Dendroctonous Monticole Hopk.). Average age and stand vigor in the lodgepole pine type are such that infestations will probably be of an endemic nature for the next 20 years or longer.

The spruce stands on the contrary are overaged, of poor vigor, and generally susceptible to insect attack. Constant vigilance will be required to detect and report any activity of Englemann spruce beetle within this type. Blowdown areas or any area having an unusual number of windfalls will be examined with particular care, since these conditions contribute materially to the building up of spruce beetle epidemics. Any occurence of spruce bud worm even if endemic in nature, should be reported promptly due to its damaging effect in Christmas tree areas.

Production of Christmas trees from this working circle was reduced 25% in 1947, and to a somewhat lesser degree each year since, by insects and diseases that result in defoliation and discoloration of needles.

The three major agencies responsible are:

1. Douglas fir needle cast (Rhabdocline Pseudotsugae Syd.),
2. Cooley Gall Louse (Adelges (Chermes) Cooleyi Gill).
3. Douglas fir needle miner (not fully identified to date).

No practical control methods have been developed to cope with this condition and consequently it is difficult to establish a firm allowable cut for Christmas trees while this situation persists.

e. Fire Control

The working circle has had an average annual occurrence of ten fires and a mean annual burned area of 23 acres. Only one large fire has occurred within the ten-year period. All other fires have been small in size and have resulted in only minor damage to poles and mature timber. The trend toward smaller fires and less damage has been due both to increased efficiency of the fire control organization and to favorable weather conditions.

Fire control protection for this working circle is provided by the regular fire control organization of the Kootenai National Forest. A detailed fire plan is followed which establishes standards of prevention, presuppression and suppression action.

Sale contracts require specific fire protection methods on the part of the operators. A detailed fire plan for each sale area will be prepared by the forest officer in charge. Present standards should be maintained.

If partial slash disposal would result in a fire hazard that is not adequately covered by the normal protection force and fire control funds are not available for the necessary additional protection needed,

adequate slash disposal funds will be collected to provide the additional protection needed for the number of years required for nature to reduce the hazard to normal.

f. Acquisition

The land ownership pattern has varied through the years. In good times there has been a tendency to private ownership, while in depression periods, taxes have defaulted and lands have passed to public ownership. The mixed pattern of ownership in certain areas is unquestionably an administrative problem. Some obvious adjustments can and should no doubt be worked out through the exchange procedure. The need for a detailed land use plan is apparent after which a suggested land ownership pattern can be developed and gradually placed into effect, using such acquisition and exchange procedure as may be available to accomplish the objective. The area is still in a transition stage of land ownership. This is particularly true outside the forest boundary where acquisition by the Forest Service should be very restricted until the land use plans and economics of the area have been clarified. A few years hence the situation should be again analyzed.

Supporting Data

1. History and Economy

The first known white men to visit the area were David Thompson and his agents. In 1808 they began exploring the country and trading in furs. It was not until the early 1880's that settlers began to farm in the Fortine Creek and Tobacco River Valley. Shortly after the Great Northern Railroad was completed in 1901, the first large sawmill

was built at Eureka. Lumbering activities had something of a boom from 1910 to 1920 and then declined after the accessible private lands had been cut over. The large sawmill closed operations in 1924. The area has been without a large band mill since that time. Farming reached its peak about 1920 and then gradually declined from 1925. Many cultivated lands have been abandoned and reverted to forest cover, mostly Douglas fir and larch.

Since the closing of the large mill at Eureka, timber utilization has been principally directed to the production of railroad cross ties. At first, ties were hewn from smaller trees; then small portable circular mills were introduced to saw ties from the larger timber. Very little timber was cut from national forest land for cross ties until 1942. Prior to that time, much poor quality larch and Douglas fir timber left by the large sawmill on private land and other accessible private timber was cut. The cutting of all mature trees left most of this land with poorly to well-stocked stands of young Douglas fir growth. These are the private lands that have been cut for Christmas trees for the past twenty years and have produced on an average of 400,000 Christmas trees annually.

National forest sawlog timber was not needed for the sawmill industry until the private timber neared depletion. An increased demand for cross ties and lumber was brought on by World War II. Since 1942, the demand for timber from national forest land has steadily increased to a cut of 13,000 M bd. ft. for the year 1951. During the war years and until 1951, an average of 40 small portable mills were cutting ties and lumber. The mills vary in size from 5,000 bd. ft. to 25,000 bd. ft. per day capacity. Most of them are equipped with

short log carriages and are not capable of sawing logs longer than 10 feet. Most of the logs sawn are 8½ feet or tie lengths. Side lumber produced from these short logs could be readily marketed in rough green or green planed lumber during the lumber shortage caused by the war. Since 1948 a stable market has again developed for short dimension and it is believed that the utilization of side lumber is now on a firm basis. Cutting practices previous to 1942 involved production of cross ties only, and resulted in disposing of the rest of the log as waste. This means throwing away 40 percent of the potential merchantable timber volume.

Although utilization of timber has been encouraging the past few years continued progress in better methods of milling and marketing must be employed if the existing industry can compete in the lumber and cross tie business. Better milling equipment will be needed so longer logs can be sawn, and use of dry kilns for proper seasoning will be required before stable markets for lumber can be obtained. There has been little market demand for spruce lumber in the past in this area. The allowable cut of this species is a substantial percent of the available volume. These markets must be developed. It is pertinent that within the last month a letter was received from a large West Coast lumber company, giving promise of a future market for spruce lumber from this area.

The production of power poles has never been developed; since only in recent years has lodgepole pine been acceptable in these markets. When roads are built into the major drainages, it is hoped that there

will be opportunities for marketing these products up to the allowable cut. Practically all of these poles are on national forest land.

Cattle raising has replaced most of the other types of farming within this area and is now a major industry and livelihood for the residents. Five or six ranchers depend on cattle for their entire livelihood, while many others raise cattle to supplement incomes derived from Christmas tree cutting or production of lumber and ties.

2. Detailed Timber Data

Atlas size tables and maps prepared in 1947 are on file in the Regional Office and the Supervisor's Office.

Revision of Plan

This plan of timber management for the Tobacco River Working Circle is based on extremely extensive field data. Better factual data must be obtained for a revision of the plan by 1960.

A more intensive timber survey is currently needed to provide better basic information on timber volumes and types. Assistance by the Experiment Station will be needed in computing acceptable estimates on growth and mortality.